

## 3.2

# Data With the Same Mean

**At a Glance**

PACING 1 day

## Mathematical Goals

- Create distributions with designated means
- Recognize that data with the same mean may have different distributions
- Reason with a model that clarifies the development of the algorithm for finding the mean

## Launch

Display Transparency 3.2A.

- *Look at the two line plots. How are these distributions alike? How are these different?*

Ask students the questions in the Getting Ready. Propose the idea of having additional data sets with the same mean.

Discuss additional sets with the same mean using the cubes and the line plot. Be patient with this discussion. Have pairs work on Problem 3.2.

### Materials

- Transparencies 3.2A, 3.2B
- Stick-on notes
- Cubes (10 each of 6 different colors)

## Explore

For Question A, if students are having problems finding a data set with a mean of 4 people per household, encourage them to use trial and error. If pairs still have trouble, suggest working backwards moving from six stacks of 4 cubes to 6 stacks with different numbers of cubes in each. Make sure pairs create a line plot with stick-on notes. Students can use their successful strategy for Question A in B and C. For D, students may struggle with the idea of a “half” of a person. Explain that the mean of  $3\frac{1}{2}$  people does not have to be an actual or possible value in the data set.

### Materials

- Cubes (10 each of 6 different colors per pair)
- Stick-on notes
- Large sheets of unlined paper

## Summarize

Ask students questions while looking at the displays for Question A.

- *Are any of the distributions the same?*
- *How many different distributions are posted?*
- *Is it possible to have different distributions with the same mean?*

Discuss Questions B–D thoroughly. Ask questions that help them focus on identifying common strategies:

- *How can you use the number of people in all the households and the number of households to find the mean number of people?*

Pose an example:

- *Suppose there are 6 households with a total of 36 people. What is the mean number of people in each household?*

Ask them to find the mean in different ways. Give more examples. Help students define an algorithm for finding the mean.

### Materials

- Student notebooks

## ACE Assignment Guide for Problem 3.2

**Differentiated  
Instruction**  
Solutions for All Learners

Core 5, 10

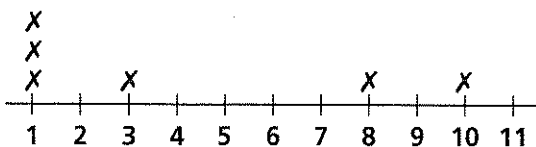
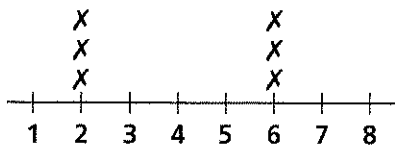
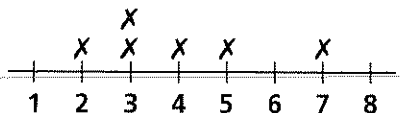
Other Applications 6; Extensions 20, 21;  
unassigned choices from previous problems

**Adapted** For suggestions about adapting  
Exercise 6 and other ACE exercises, see the  
*CMP Special Needs Handbook*.

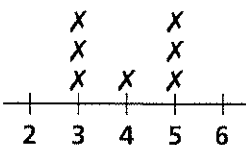
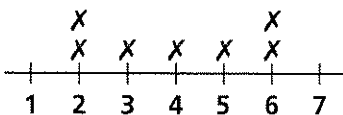
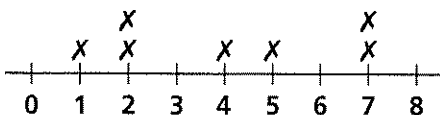
Connecting to Prior Units 10: *Bits and Pieces I*

### Answers to Problem 3.2

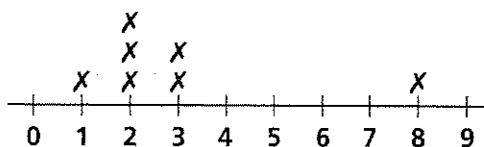
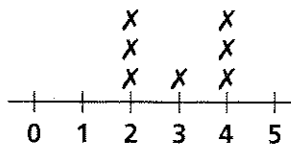
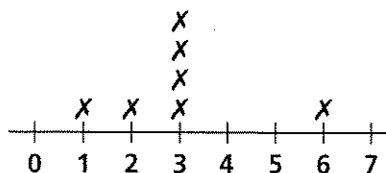
A. Possible line plots:



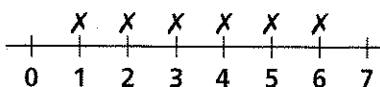
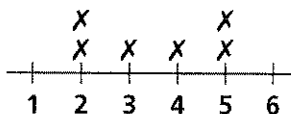
B. Possible line plots:



C. Possible line plots:



D. 1. Possible line plots:



2. The mean is the number obtained by dividing the sum of the data values equally among the households. Unlike the mode, the mean does not have to be an actual (or possible) value in the data set, so the mean can be  $3\frac{1}{2}$ .

3. The mean is not a whole number if the number of data values does not evenly divide the sum of the data values. For example, in Question D, part (1), the sum of the data is 21, but the number of data values is 6. Since 6 does not divide 21 evenly, the mean will not be a whole number.